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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,250	02/06/2004	Henry Allen Hill	114096.125 US2 (ZI-39)	8641
23483 7590 01/31/2007 WILMER CUTLER PICKERING HALE AND DORR LLP 60 STATE STREET BOSTON, MA 02109			EXAMINER ROJAS, OMAR R	
			ART UNIT	PAPER NUMBER
			2874	
SHORTENED STATUTORY PERIOD OF RESPONSE		NOTIFICATION DATE	DELIVERY MODE	
3 MONTHS		01/31/2007	ELECTRONIC	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 01/31/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

Application No.

10/774,250

Applicant(s)

HILL, HENRY ALLEN

Examiner

Omar Rojas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35, 37 and 38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28-35 is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-14, 23-27, 37 and 38 is/are rejected.
- 7) ☒ Claim(s) 11 and 15-22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☒ Other: Detailed Action.

## DETAILED ACTION

### *Response to Amendment*

1. With regards to the amendment filed on November 15, 2006, all the requested changes to the claims have been entered. Claims 1-35 and 37-38 are pending.

### *Response to Arguments*

2. Applicant's arguments with respect to claims 1 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

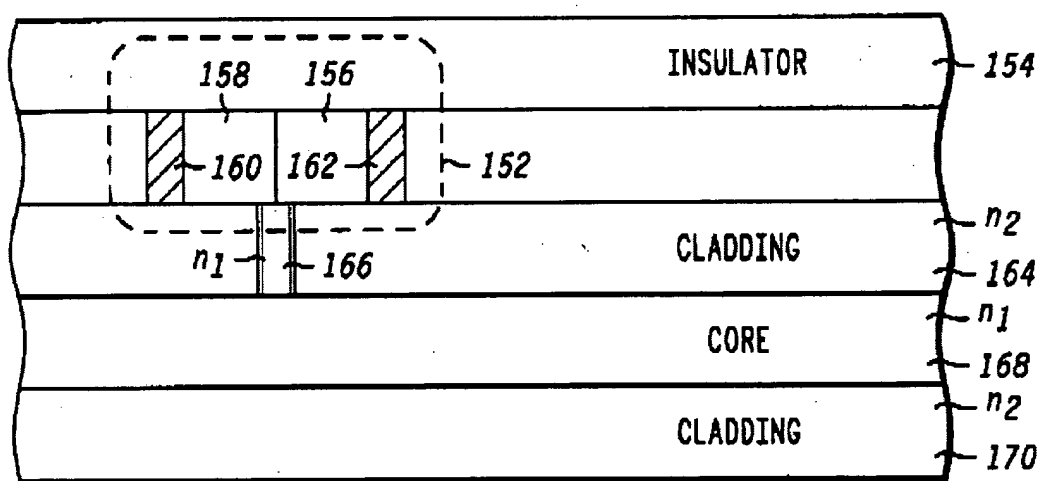
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-7, 9, 10, 12-14, 24, 25, 27, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Patent No. 5,864,642 to Chun et al. ("the '642 patent").**

*In re* claims 1, 2, and 27, the '642 patent discloses a multiple source array (e.g., Figure 6) comprising:

a guided-wave structure 150 in which one or more guided-wave modes are excited during operation, said guided-wave structure 150 including a planar dielectric core 168, a first dielectric cladding layer 164 covering and defining a boundary of a first side of the dielectric core 168, and a second dielectric cladding layer 170 covering a second side of the dielectric core 168 that is opposite from the first side; and

a dielectric-filled guided-wave cavity 166 in the first cladding 164 beginning at said boundary and extending transversely from the dielectric core 168 into the first cladding 164 and forming an aperture through which optical energy that is introduced into the core exits from the core, the cavity causing said optical energy to exit from the core through the aperture (col. 3, lines 41-58). The cavity 166 inherently has one or more transmission modes that during operation couple to the one or more guided-wave modes of the guided-wave structure because the structure of the '642 patent is identical to that of the claims. Although only one cavity 166 is shown in Figure 6, it is clear from Figure 2 of the '642 patent that an array of such cavities can also be used. See columns 1-3 for further details. Figure 6 of the '642 patent is reproduced below.



**FIG. 6** 150

In re claim 3, the guided-wave structure 150 of the '642 patent inherently generates excited-wave modes in response to receiving a source beam characterized by a wavelength  $\lambda_0$  because the physical structure of the '642 patent is identical to that of the claim. Furthermore, the cladding layers 164 and 170 inherently have thicknesses such that leakage represents a negligible loss to

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the guided-wave modes because the cladding layers 164 and 170 have a structure that is identical to that claimed.

*In re* claim 4, the recited limitation(s) are also considered to be inherent in the '642 patent since his guided-wave structure 150, including the first and second cladding layers, has the same physical structure to that claimed.

*In re* claims 5-7, the recited limitations are also clearly suggested to one of ordinary skill in the art by column 3, lines 28-54 of the '642 patent.

*In re* claim 9, the guided-wave structure 150 can be designed to operate at a many different wavelengths (col. 4, lines 2-10)). The cavity 166 also has a selected width. Therefore, the limitations of claim 9 are considered to be inherently present in the '642 patent because there would exist at least one wavelength  $\lambda_0$  among the many possible wavelengths that can be used in the '642 patent such that the width of the cavity is on the order of  $\lambda_0/2n_f$  wherein  $n_f$  is the index of refraction of the dielectric in the cavity .

*In re* claim 10, the guided wave cavity 166 inherently has a selected width so that there exist transmission modes of the cavities that couple to excited wave modes of the guided wave structure because it has the same claimed structure.

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*In re* claim 12, the guided wave structure 150 can operate at different wavelengths as mentioned in columns 4-5. Furthermore, no specific reference wavelength is given to define the term "sub-wavelength". It can be assumed that the cavities 166 disclosed by the '642 patent are smaller than microwave or radio wavelengths which are on the order of  $10^2$  meters and greater.

Therefore, the cavities 166 are inherently also sub-wavelength in size.

*In re* claim 13, a source that delivers an optical beam to core 168 is inherently present in the '642 patent because there is light present in the core 168 (col. 3, lines 55-58).

*In re* claim 14, the recited limitation(s) are considered inherently present in the '642 patent because the guided-wave structure 150 of the '642 patent has the same structural features to those of the claim.

*In re* claims 24-25, the photo-diode 152 shown by the '642 patent corresponds to the recited compensating layer.

*In re* claims 37-38 the recited limitation(s) are also inherently present in the '642 patent because the '642 patent discloses the same claimed structure.

### ***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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**6. Claims 8, 23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '642 patent as applied to claims 1 and 2.**

*In re* claim 8, the '642 patent only differs in that the shape of the cavity 166 is not disclosed as rectangular in cross-section. It has been held that mere changes in shape are unpatentable. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). The *Dailey* court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant. In the case at hand, no evidence has been presented that using a rectangular cross-section has particular significance in the claimed invention. Therefore, claim 8 is unpatentable over the '642 patent using the rationale provided by the *Dailey* court.

*In re* claims 23 and 26, the '642 patent only differs in that the dielectric core 168 is not disclosed as comprising a material that transmits in the UV such as lithium fluoride, calcium fluoride, etc. However, the materials recited by claim 26 are well-known to transmit UV radiation. Ultraviolet ("UV") radiation is commonly used for optical signals such as those described in the '642 patent. Therefore, the materials recited by claim 26 are recognized in the art as suitable for the purpose of transmitting optical signals in the form of UV radiation. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) (Claims to a printing ink comprising a solvent having the vapor pressure characteristics of butyl carbitol so that the ink would not dry at room temperature but would dry quickly upon heating were held

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invalid over a reference teaching a printing ink made with a different solvent that was nonvolatile at room temperature but highly volatile when heated in view of an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks and a catalog teaching the boiling point and vapor pressure characteristics of butyl carbitol. "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle." 325 U.S. at 335, 65 USPQ at 301.). See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). Therefore, claims 23 and 26 are unpatentable over the '642 patent using the same rationale given by the courts in *Sinclair* and *Leshin*. Because the materials recited by claim 26 were well-known to transmit UV radiation at the time of the claimed invention, it would have been obvious to one of ordinary skill in the art to select at least one of the same materials to use in the '642 patent for the purpose of transmitting optical signals.

***Allowable Subject Matter***

7. Claims 28-35 are allowed.
8. Claims 11 and 15-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claim 11, the primary reason for allowance of the claims is the inclusion of a two-dimensional array of dielectric-filled cavities. In the examiner's opinion, it would not have been obvious to modify the '642 patent to use a two-dimensional array of cavities absent Applicant's own teachings.



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With respect to claims 15-22, the primary reason for allowance of the claims is the inclusion of a prism coupler located against the first side of the dielectric core for coupling an optical input beam into dielectric core. In the examiner's opinion, it would not have been obvious to modify the '642 patent to use a prism coupler located against the core absent Applicant's own teachings.

With respect to claims 28-35, the primary reason for allowance of the claims is the inclusion of an optical measurement instrument and using the multiple source array to provide an array of optical beams as input to the optical measurement instrument. In the examiner's opinion, it would not have been obvious to combine an optical measurement instrument with the '642 patent in an identical manner to that recited by claims 28-35 absent Applicant's own teachings.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (571) 272-2357. The examiner can normally be reached on Monday-Friday (12:00PM-8:00PM).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick, can be reached on (571) 272-2344. The official facsimile number for regular and After Final communications is (571) 273-8300. The examiner's RightFAX number is (571) 273-2357.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Omar Rojas  
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or  
January 23, 2007



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